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(54) Title: METHOD FOR PRODUCING CEPHALO EXPOSURES

(57) Abstract

The invention relates to a method for taking cephalometric images. The method of the invention comprises taking cephalometric images by means of a horizontally directed scanning motion and regulating the exposure level automatically.

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Method for producing cephalo exposures

The present invention relates to a novel, improved method for taking cephalometric images.

In lateral cephalometric imaging, the skull of a patient is X-rayed from a lateral direction. At present, the cephalometric images are most commonly taken by using constant speed intensifier screens, as well as most commonly by using e.g. a variable-speed intensifier screen or digital image processing, whereby the exposure is performed in a normal fashion. One problem in this type of method is that the radiation level is not optimal as far as the patient is concerned. It has also been common to use a wedge-shaped filter between the patient and a radiation source for regulating the level of exposure in cephalometric imaging, as described, e.g. in US patents US-4641336 and US-5454023. One problem in this type of solution is a relatively complicated mechanical construction.

Thus, an object of the present invention is to provide a relatively simple method for taking cephalometric images, especially digital cephalometric images. In order to achieve this object, a method of the invention is characterized in that the method comprises taking cephalometric images by means of a horizontally directed scanning motion, and that the method comprises regulating the level of exposure automatically. In the scanning motion, the receiving detector travels horizontally along with the radiation beam.

In one embodiment of the invention, the radiation level is lowered in soft tissue regions through automatic control for obtaining a correct level of exposure for soft tissues.

The automatic regulation of technique factors is preferably based on the amount of radiation transmitted through the patient. In digital imaging, the reception of radiation is effected, e.g. by using a CCD sensor or storage phosphor (CR) technology.

One major benefit gained by a method of the invention is that the so-called lateral image requires no extra filtering in soft tissue regions, e.g. a filter wedge, since, when scanning within the region of soft facial tissues, the radiation level can be lowered by automatic control for obtaining a correct exposure level for soft tissues. On the other hand, the automatics can be applied for using a higher exposure level for skeletal regions which are equally essential in terms of the measurements to be made, yet less transmissive to radiation.

In addition, according to a method of the invention, the high requirement for dynamics, which is difficult to control in technical sense (low exposure level for soft tissue and high for bone tissues), can be "chopped" in terms of time and place and, thus, the problem can be solved in pieces. As compared with currently used image processing methods, in which it is necessary, for the above reasons, to manipulate the dynamics of the image, one benefit gained by the invention is the reduction of a radiation dose received by the patient.

As compared with the solution of using a filtering wedge, one benefit is e.g. a considerable reduction in the number of mechanical units, the omission of an installation adjustment, as well as a possibility for non-linear filtering.

The automatic regulation of an exposure level can be effected by using a plurality of measurable quantities, together or separately; e.g. the amount of transmitted radiation, the position of a scanning radiation detector relative to the patient, and the location of patient positioning equipment. The shape of a regulation curve has also fewer restrictions than in the prior known implementations.

Claims

1. A method for taking cephalometric images, characterized in that the method comprises taking cephalometric images by means of a horizontally directed scanning motion, and that the method comprises regulating the level of exposure automatically.

2. A method as set forth in claim 1, characterized in that the exposure level is lowered in soft tissue regions under the control of automatics for obtaining a correct exposure level for soft tissues.

3. A method as set forth in claim 1 or 2, characterized in that the automatic regulation of technique factors is based on the amount of radiation transmitted through the patient.

4. A method as set forth in claim 1 or 2, characterized in that the automatic regulation of technique factors is based on the position of a scanning radiation detector relative to the patient.

5. A method as set forth in claim 1 or 2, characterized in that the automatic regulation of technique factors is based on the location of patient positioning equipment.

6. A method as set forth in any of the preceding claims, characterized in that the imaging is performed by using digital imaging.

7. A method as set forth in claim 6, characterized in that, in digital imaging, the reception of radiation is performed by using a CCD sensor system.

8. A method as set forth in claim 6, characterized in that digital imaging is performed by using storage phosphor (CR) technology.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 99/00471

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A61B 6/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A61B, G03B, H05G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FI 92974 B (ORION-YHTYMÄ OY), 13 December 1993 (13.12.93) --	1-8
X	FI 100296 B (ORION-YHTYMÄ OY), 15 June 1997 (15.06.97) --	1-8
A	JP8019534(MORITA MFG CO LTD) 1996-05-31 (abstract).(online)(retrieved on 1999-10-25). Retrieved from: EPO PAJ Database --	1-8
A	US 3808442 A (FRANCESCO POGGIO), 30 April 1974 (30.04.74) --	1-8

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5454023 A (AUVO ASIKAINEN), 26 Sept 1995 (26.09.95)	1-8

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